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SUPPLEMENTARY NOTES ON NORTH AMERICAN AND MEXICAN SPECIES OF *DECODES* AND *ARGYROTAENIA*, WITH DESCRIPTIONS OF NEW SPECIES (LEPIDOPTERA: TORTRICIDAE)

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Subsequent to completion of my manuscript in June, 1962, on California members of *Decodes* and *Argyrotaenia*, biological data and material representing an undescribed species in each genus in California have accumulated. These data are presented here as a supplement to my earlier treatment (Powell, 1964). In addition, since our recent discussions concerning species of these genera (Powell, 1960; Obraztsov and Powell, 1961; Obraztsov, 1961) a number of records have accumulated which provide significant data on variation or geographical distribution.

Males of many species of both these genera have oblong eyes relative to the round eye of the female, a fact not noted in my earlier descriptions. Thus males have a slightly greater "vertical eye diameter" than do females (usually about 10% greater), and ratios given previously comparing eye diameter with length of the labial palpus refer to males only. This sexual dimorphism does not occur in all Tortricinae (e.g., *Acleris*, where male and female eye shape and size appear to be comparable), but it may be common to most Cnephasiini and Archipini.

Decodes fragarianus (Busck)

Tortricodes fragariana Busck, 1919, Proc. Ent. Soc. Washington, 21:52.

Decodes fragarianus, Obraztsov and Powell, 1961, Jour. Lepid. Soc., 14:115, figs. (1960) (taxon., synon.); Powell, 1964, U. California Publ. Ent., 32:133, figs. (taxon., lit., biol.).

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As pointed out to me by J. G. Franclemont, Cornell University, Ithaca, the synonymy of this species should be corrected by transferral of the Forbes (1924) report of *fragarianus* in New York, to *D. basiplaganus*, since the former is not known east of the Rocky Mountains.

A male and female from Millard County, Utah (9 mi. E Oak City, IX-2-63, D. C. & K. A. Rentz) have a very pale ground color in comparison to California specimens. The Utah moths have the basal band considerably darker than any other marking of the wing and superficially resemble *D. montanus* more than do any other *fragarianus* I have seen. In male genitalia the Utah specimen differs by having a somewhat more tapered fultura superior (JAP prep. no. 1586), approaching the form shown by *D. basiplaganus*. The distinctive female genitalia, aedeagus, and small socii characteristic of *fragarianus* are shown by the Utah specimens, however.

A series from Inverness, Marin Co., California (10♂♂, 1♀ VIII-19 to IX-23-62, C. A. Toschi) exhibits a paler forewing ground color than most California examples, but the basal band is not darker than the median one. As a result, the whitish submedian band and dorsal area are the most distinctive markings and a resemblance to *D. lundgreni*, described below, is shown.

In discussion of the biology of *D. fragarianus* (Powell, 1964) mention was made of three males taken mid-June to mid-July, 1960, at El Cerrito and Berkeley in the urban east bay area of the San Francisco Bay region. Since the remainder of more than 400 specimens examined from low elevation spots in California were taken or reared between mid-August and early November, it was suggested that unnatural stimuli due to effects of man may have been of significance in the early emergences. During a warm spell in late June, 1962, however, a series of females was taken at a blacklight in the same area (Piedmont Pines, NE Oakland, 1♂, 7♀♀ VI-19 to VII-1-62, P. D. Hurd, Jr.). Several of the females retained dirt in the papillae anales, indicating that oviposition had occurred. Although it is still possible that watering of lawns under oaks or other effects of urbanization may be the causal agent of these early flights, the present record suggests that colonies in given years may eliminate much of the pupal aestivation diapause. Whether egg diapause could withstand the prolonged period of dryness (heat is not necessarily a factor in this region) is not known.

One additional record regarding pupation site is noteworthy. In August, 1962, J. A. Chemsak, University of California, Berkeley, reared a male of *D. fragarianus* from logs of *Quercus agrifolia* which had been caged for studies on cerambycids. The moth emerged August 14 from material which had been cut about the end of July from more than ten feet above the ground on a living tree. The branch piece was caged the day following cutting, and since pupation is presumably completed by May, the larva must have pupated in the rough bark. Both laboratory and field evidence indicated that the normal pupation site is in the soil (Powell, 1964), and no *Decodes* cocoons were discovered during subsequent extensive examination of *Q. agrifolia* bark on trees in San Francisco and Berkeley (Powell, 1963).

Decodes basiplaganus (Walsingham)

Sciaphila basiplagana Walsingham, 1879, Illus. Typ. Spec. Lep. Het. Brit. Mus., 4:23, Fig.

Tortrix basiplagana, Engel, 1908, Ann. Carnegie Mus., 5:117.

Decodes basiplaganus, Obraztsov & Powell, 1961, Jour. Lepid. Soc., 14:116 (1960), Figs. (taxon., synon.); Powell, 1964, U. California Publ. Ent., 32:137, Figs. (taxon., lit.).

Tortricodes fragariana, Forbes (not Busck, 1919), 1924, Mem. Cornell Univ. Agr. Exp. Sta., 68:488.

Through the efforts of the late H. M. Bower, Wausau, Wisconsin, I have been able to study a series of *D. basiplaganus* from north central Wisconsin (Lake Katherine, Oneida Co., 50♂♂, 34♀♀ VIII-11 to IX-8-61). In addition to representing a northern record for the species, the series is unique in that females consistently show an elongate signum (5 preparations examined), which is about five to seven times as long as its greatest width, or relatively about half as long as that shown in the *johnstoni* group. This is the only known example in the genus where the signum exhibits appreciable interpopulational variation. Superficially the Wisconsin moths resemble those from other areas, being a little darker than the few *D. basiplaganus* seen from California.

Decodes lundgreni Powell, new species

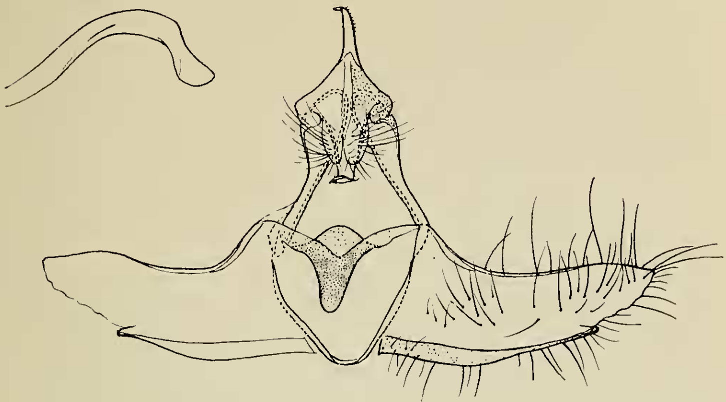
A moderately large *Decodes,* with narrow forewings having a conspicuous outer costal triangle that is particularly dark in the female. *Holotype male:* Length of forewing 10.1 mm. *Head:* Labial palpus small, appressed scaled; second segment about 0.8 times as long as vertical eye diameter, nearly straight, not expanded distally; third segment about one-half as long as second, little obscured by scaling of second; dark gray, the scales narrowly white tipped. Antenna scaled dorsally, banded, only inconspicuously paler. Tufts of crown and vertex compact, dense, the scales conspicuously white at tips. *Thorax:* Dorsal scaling concolorous with head, tegula whitish at tip; metanotal brushes rather sparse, not concealing scutellum, latter unscaled. Underside shining whitish; pro- and mesothoracic legs dark gray exteriorly excepting whitish tibial and tarsal bands; metathoracic leg dirty whitish except tibial spurs and tarsi at bases dark. *Forewing:* Length about 3.1 times width; costa evenly curved from base to apex, latter acute, termen strongly angled back. Ground color pale whitish gray, marked by rather distinct dark gray as follows: a transverse band at basal one-fifth indicated by a triangular spot on costa and a small, irregular blotch at cubital fold; a large triangular blotch on costa, its inner side distinct, from costa before middle nearly to dorsal edge of cell at middle of wing, outer side less distinct, towards costa before apex; blending with apical infuscation, latter terminated by a distinct vertical mark before termen below apex; costa in triangle with three or four darker marks; a small mark on dorsum just before tornus. Underside dark gray, costa slightly paler with distal dark marks of upperside reproduced. *Hindwing:* Slightly broader than forewing, apex rather acute, termen concave and strongly angled back, tornus scarcely discernible. Pale gray, fringe paler. Underside pale, mottled with grayish, the veins darker. *Abdomen:* Gray, caudal segmental bands and genital tuft dirty whitish. Genitalia as in Fig. 1 (drawn from paratopotypes, JAP prep. nos. 1557, 1560: aedeagus; four preparations examined); socii moderately elongate, gnathos rather short; sclerotized flap of fultura superior narrow, evenly curved, U-shaped; sacculus narrow, its tip slightly free.

Allotype female: Length of forewing 9.2 mm. Similar to male, differing as follows: second segment of labial palpus about 0.9–1.0 times eye diameter. Forewing pattern with markings less distinctly margined but darker and more conspicuous, ground color somewhat more infuscated with darker scales. Abdomen uniform dirty whitish; lateroventral tufts of eighth segment slightly darker, reflecting purplish. Genitalia as in Fig. 3 (drawn from paratopotype, JAP prep. no. 1589, three preparations examined); sterigma with an elongate, tapered plate of antrum; signum elongate, broadened, rasp-like.

Holotype male and allotype female: Twain Harte, Tuolumne Co., California, 4 October 1963 (M. Lundgren) deposited in the California Academy of Sciences, San Francisco. Paratypes: 52♂♂, 14♀♀, same data, except IX-27 to X-18-63, deposited in the American Museum of Natural History, British Museum, California Academy of Sciences, California Insect Survey, and U. S. National Museum.

Range of length of forewing in paratypes: males, 8.9 to 10.4 mm; females 8.5 to 9.3 mm. All are essentially similar to the above description, the sexual dimorphism being consistent. Most of the specimens are somewhat worn and consequently show the color pattern less well defined than on the holo- and allotype. The whitish scaling seems easily lost; and it is mostly lacking from worn individuals, which show only the darkest areas of the pattern. Eighteen additional specimens (16♂♂, 2♀♀) with the same data were examined but not designated as paratypes; they are so worn that no pattern is evident. Several males show a greater development of dark gray in the basal area particularly as an outwardly pointed extension along the cubital fold, so that a pale submedian band comparable to that of other *Decodes* is defined between the basal area and costal triangle. Some of these have the costal triangle infused with pale scales except on its inner margin. In all, however, the triange is the most conspicuous mark of the wing, whereas in *D. fragarianus, basiplaganus,* and *montanus,* the basal dark band or pale submedian band are more conspicuous.

The narrow forewing and elongate signum are characters *D. lundgreni* shares with the *johnstoni* group. However, in male genitalia the species is a member of the *fragarianus* group and is most similar to *D. montanus,* differing by the small sclerotized plate of the fultura superior. The female genitalia are distinguished by the narrow, tapering plate of antrum and the elongate signum.



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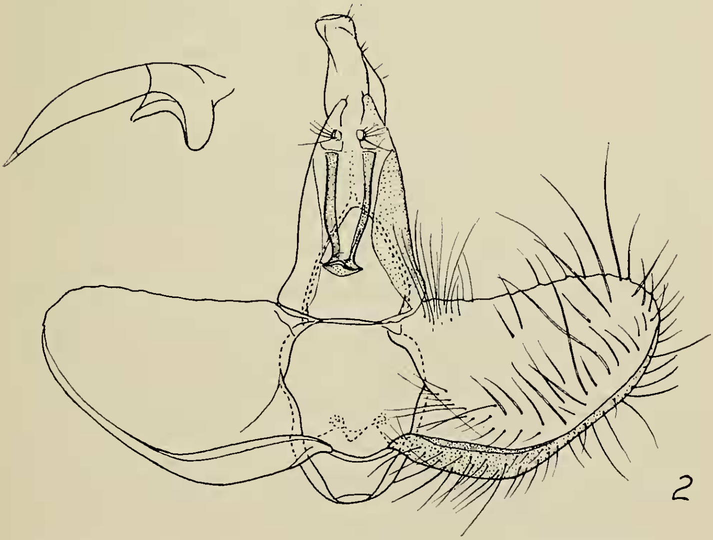

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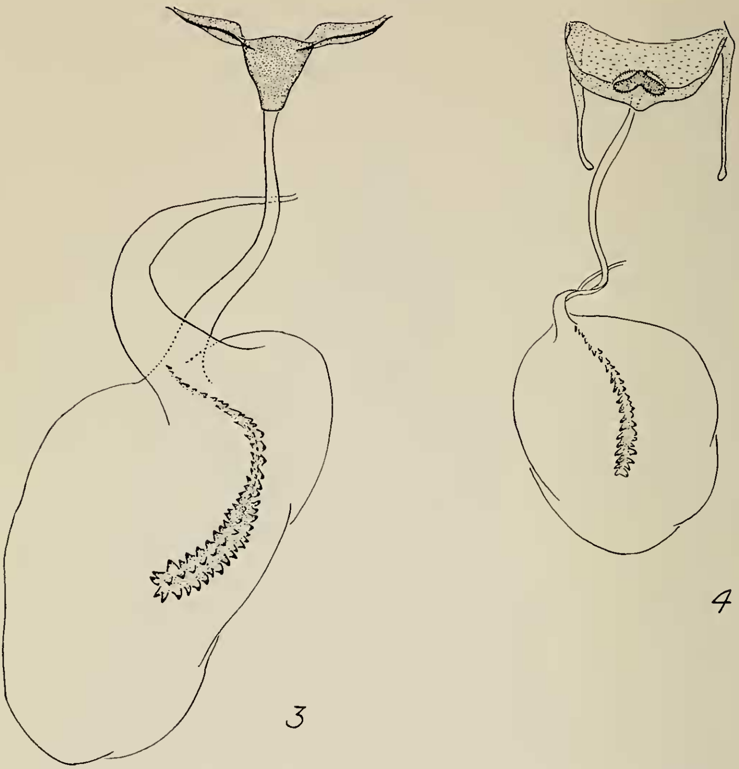
Figs. 1, 2, male genitalia ventral aspect, valvae spread; aedoeagus removed, shown lateral aspect. 1, *Decodes lundgreni* Powell; 2, *Argyrotaenia lignitaenia* Powell.



FIGS. 3, 4, female genitalia, structures associated with eighth abdominal segment, ventral aspect. 3, *Decodes lundgreni* Powell; 4, *D. australis* Powell.

The series was taken at a 15-watt fluorescent blacklight in the absence of any other species of *Decodes*. The type locality is situated on the west slope of the Sierra Nevada at about 3600 feet elevation. The single specimen representing a record for *D. fragarianus* in the Sierra Nevada (Powell, 1964) from Silver Lake, Amador County (7200′) has been reexamined and confirmed as that species. I take pleasure in naming this species for Milford Lundgren, of Twain Harte, who has collected many rare and little known Microlepidoptera in my interest during the past several years.

Decodes australis Powell, new species

A moderately small *Decodes* with pale forewings showing a distinct dark basal band and median spot, from central Mexico.

Holotype female: Length of forewing 7.6 mm. *Head:* Labial palpus length about 0.8 times vertical eye diameter, third segment about one-half the length of second; dark gray exteriorly, whitish interiorly. Antenna scaling pale, distinctly banded with whitish dorsally to beyond basal half. Scale tufts compact, of crown rather decumbent, white; of front nearly appressed, brownish with white tips; of occipital area spreading, erect, mostly whitish with some brownish scales interspersed. *Thorax:* Dorsal scaling brownish gray, the scale tips white, tegulae apices broadly whitish; laterocaudal tufts of metanotum reduced, white, not obscuring scutellum, latter unscaled. Underside scaling shining whitish; pro- and mesothoracic legs banded with dark brownish gray, metathoracic leg whitish. *Forewing:* Length about 2.7 times width; costa gently curved from base to apex, latter pointed, termen not strongly angled back, dorsum slightly concave before tornus. Ground color pale whitish gray, somewhat infused with brownish gray especially along margins in outer half and sparsely irrorate with blackish scales; markings distinct, dark brownish gray, as follows: a basal spot below costa, a band at basal one-fourth, bent downward in cell, becoming indistinct below cubital fold (holotype badly worn in anal area); a vertical, oblong spot at about middle of wing, from within cell towards dorsum, becoming indistinct before latter. Fringe pale grayish. Underside gray, basal area whitish. *Hindwing:* About as broad as forewing; uniform dark gray, fringe paler. Underside whitish, infused with grayish between veins, more heavily so in basal half and in costal area. *Abdomen:* Treated in caustic solution and deposited in glycerine. Genitalia as in Fig. 4 (drawn from holotype, JAP prep. no. 1097, one preparation examined); sterigma heavily sclerotized but short, without an elongate plate of antrum; ductus without sclerotized areas; signum a rasp-like band.

Holotype female: Ridge northwest of Jocoque Dam, Aguascalientes, Mexico, 19 August 1960 (P. H. Arnaud, Jr., E. S. Ross, D. C. Rentz); unique, deposited in the California Academy of Sciences.

The broad forewing of *australis* is similar to the *fragarianus* group, but without male genitalia characters available, conclusions as to relationships of the species cannot be made. The locality is some 600 miles to the south of previous *Decodes* records.

Argyrotaenia montezumae montezumae (Walsingham)

Tortrix montezumae Walsingham, 1914, Biol. Centr. Amer., Lep. Het., 4:280.

Argyrotaenia montezumae montezumae, Obraztsov, 1961, Amer. Mus. Novitates, 2048: 2, Figs. (synon.).

This species has been recorded from Honduras, Guatemala, and in Mexico from Veracruz, Puebla, and Mexico, D.F. In his recent treatment of some Mexican species Obraztsov (1961) illustrated some of the variation which males of *montezumae* exhibit, and he recognized the dissimilar *A. impositana* (Walsingham) as the female of *montezumae*. Provided this interpretation is correct, the sexual dimorphism is comparable to that shown by *A. citrana* in California, and similarly, the females appear to be less variable than the males.

Several specimens in the California Insect Survey collection provide noteworthy Mexican records for *A. montezumae*, as follows.

VERACRUZ: 1 mi. W Fortin, 1 ♂ VII-2-62 (D. H. Janzen), a small (forewing length 6.8 mm) and distinctly marked specimen; Fortin de las Flores, 2 ♀ ♀ XII-25-63 (C. A. Toschi & M. J. Tauber), large (forewing length 8.9–9.4 mm) and typically indistinctly marked specimens. Obraztsov mentions that Mexican specimens taken in October, November, and December have the ground color "more yellowish" and the markings paler. Other records given by Walsingham and Obraztsov are for June, July, and August, but none of these moths is figured. The Fortin July male and December females have about the same shade of dark ochreous ground color.

ZACATECAS: 9 mi. S Fresnillo, 1 ♂, 1 ♀ VIII-20-56 (D. D. Linsdale). This locality is considerably north of known records for the nominate subspecies. The Fresnillo female resembles Veracruz specimens in size and color. However, the male is unlike both *A. m. montezumae* and the Arizona race, *A. m. huachucenisis* Obraztsov. The Zacatecas male is large (forewing length 8.8 mm), although scarcely larger than the range given for *montezumae* by Walsingham. The forewing ground color is dark ochreous, with the markings ochreous-brown, well defined, but not strongly contrasting. The basal markings are obsolete: the median band is more uniformly parallel sided than in Veracruz and Puebla *montezumae*, only slightly indented by ground color in the cell. The genitalia are not distinguishable from Obraztsov's photograph (Figs. 6, 7) of a specimen from Puebla.

Argyrotaenia lignitaenia Powell, new species

A reddish moth, resembling *A. niscana*, but larger, paler, and having the forewing markings less distinct.

Holotype male: Length of forewing 9.6 mm. *Head:* Labial palpus rather short, second segment about 1.2 times vertical eye diameter; third segment less than one-third the length of second; scaling rust brown exteriorly, darker at apex (one palpus lacking). (Antennae lacking.) Head tufts dense, red brown, median scales darker apically; (front denuded). *Thorax:* Dorsal scaling pale orange brown; lateroposterior tufts of metathorax whitish, short, not obscuring scutellum, latter with a few elongate, white scales. Underside scaling shining whitish; prothoracic leg blackish, meso- grayish, meta- whitish exteriorly. *Forewing:* Narrow, length about 2.9 times width; costa slightly bowed from base to middle, slightly concave beyond; apex acute, pointed, termen strongly angled back, straight. Ground color pale rust orange basally, becoming dark rust brown distally; basal half without distinct markings, irrorate with diffuse, pale spots, a pale costal area at one-third; a rather

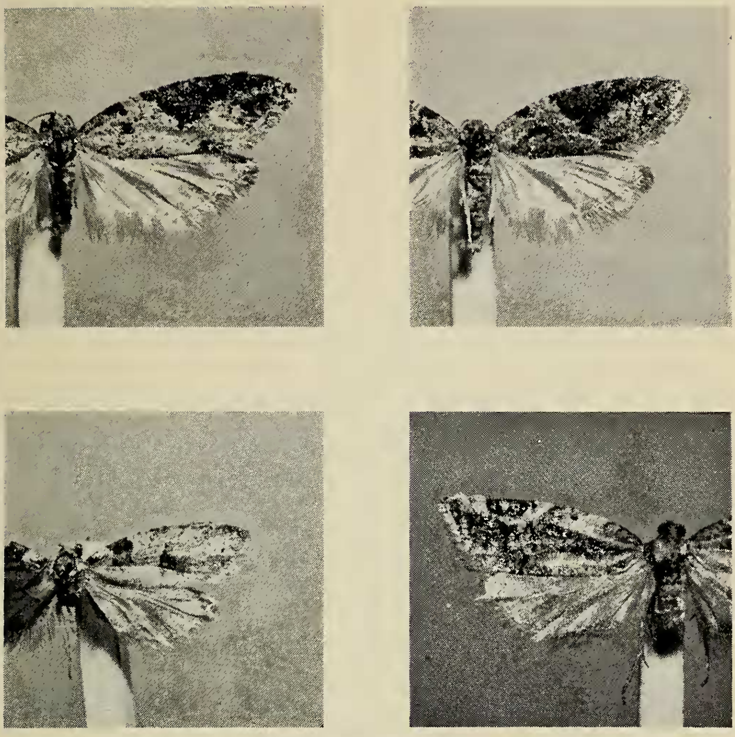


FIG. 5. Upper left, *Decodes lundgreni* Powell, holotype male; upper right, *D. lundgreni,* allotype female. Lower left, *D. australis* Powell, holotype female; lower right, *Argyrotaenia lignitaenia* Powell, holotype male.

distinct outwardly angulate band from just beyond mid-costa to end of cell, angled upward towards apex, meeting a pale triangular spot on costa before apex; some dark gray scales through end of cell preceding and following outer costal band, defining it outwardly. Fringe pale yellowish, orange at apex and tornus. Underside gray, faintly reflecting purplish, costa irregularly blotched with pale ochreous, especially on distal half; fringe pale ochreous. *Hindwing:* About as broad as forewing; costa nearly straight, slightly convex before apex, termen concave below apex, dorsum very slightly concave. Dorsal scaling pale gray; fringe whitish with gray band. Underside white, sparsely irrorate with grayish on apical half. *Abdomen:* Pale gray dorsally, shining white ventrally. Genitalia as in Fig. 2 (drawn from holotype JAP prep. no. 1092, one preparation examined); of *niscana-franciscana* group, socii small, gnathos blunt, valvae somewhat pointed; uncus constricted in distal half; aedeagus tip beveled, simple.

Allotype female: Length of forewing 9.2 mm. Essentially as described for male, differing as follows: Labial palpus second segment about 1.5 times eye diameter, scaling pale rust orange exteriorly, whitish interiorly. Antenna less than one-half costa length, scaling dark gray ventrally, rust colored dorsally. Scaling of front not appressed, pale rust orange, becoming dark adjoining palpi. Forewing markings entirely indistinct, only suggested in basal half, distally not well defined. Genitalia not examined; presumably the same as the uniform *niscana-franciscana* group.

Holotype male and allotype female: Pinyon Flat [16 road miles southwest of Palm Desert], Riverside Co., California, 17 April 1962 (C. D. MacNeill) deposited in the California Academy of Sciences.

The close superficial resemblance of *A. lignitaenia* with *niscana,* which is associated with *Adenostoma fasciculatum* in cismontane southern California (Powell, 1964), suggests that the present species may be associated with *Adenostoma sparsifolium* which occurs along the east side of the San Jacinto Mountains and in other inland areas of southern California.

Argyrotaenia franciscana franciscana (Walsingham)

Lozotaenia franciscana Walsingham, 1879, Illus. Lep. Het. Brit. Mus., 4:13, Fig.

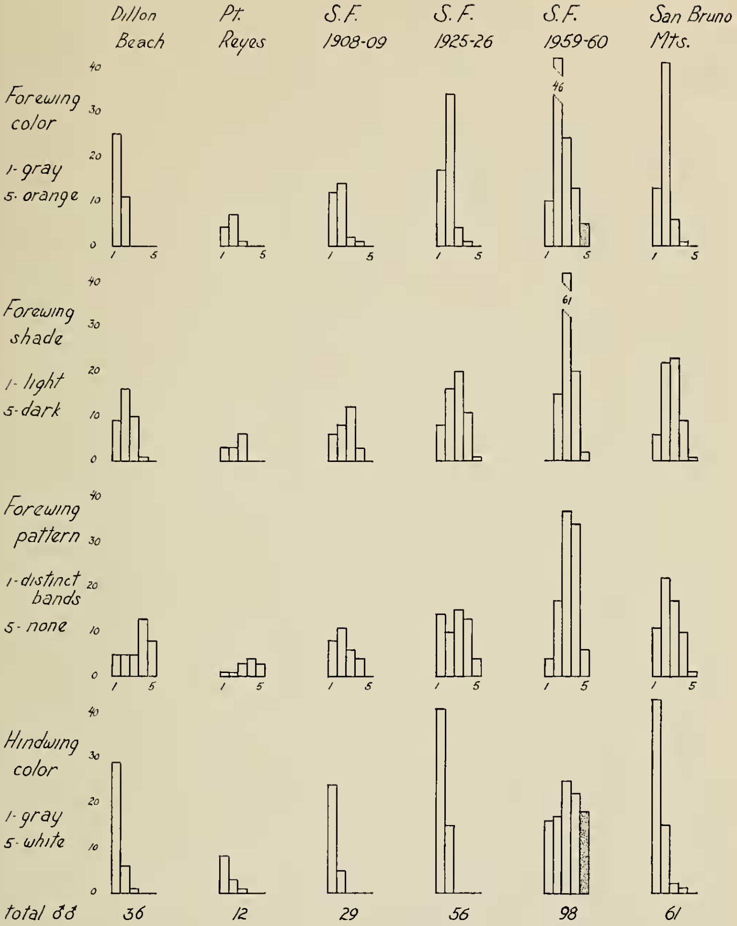
Argyrotaenia franciscana franciscana, Powell, 1964, U. California Publ. Ent., 32:196, Figs. (Taxon., synon., biol.).

Graph I illustrates some interpopulational variation in wing color exhibited by males of *A. f. franciscana* and shows change in the San Francisco population during a 50-year period. This evolution in phenotype was discussed and given as evidence that the typical *franciscana* once present on the sand dunes in western San Francisco (the type locality) has been affected by introduction of *Argyrotaenia citrana* as the area was urbanized (Powell, 1964).

Characteristics of depth and quality of wing color and pattern were subjectively estimated for each individual by comparison with extremes which were given numerical values of 1 and 5. Thus the graphs represent relative proportions of these characters, subject to sampling error. All the pinned specimens in the California Academy of Sciences and California Insect Survey collections were used. Females tend to be less distinctly marked and less variable, but specimens are not available in sufficient numbers to enable comparison.

Four recent California collections of this race are of interest:

1) Dillon Beach, Sonoma Co., 35♂♂, 1♀ V-18-63 (J. Powell). These were flushed and netted from beach dune bushes of *Lupinus chamissionis* on a foggy day. The series represents the only sizable ecotypic sample of the species to have been taken in the past 50 years. The forewing pattern is essentially similar to that shown by the small



Graph I. Distribution of individuals of *Argyrotaenia franciscana* (Wlshm.) according to wing color and pattern characteristics. Samples originate from four localities and from three areas at western San Francisco, spanning the urbanization period of that area. The shaded bars, exhibited only by recent collections at San Francisco, indicate forewing and hindwing colors typical of *Argyrotaenia citrana* (Fernald).

series taken at Pt. Reyes, Marin County in 1957–58, differing from populations further to the south by the prevalence of individuals with the pattern reduced or obsolete and by a general paler ground color (Graph I).

2) San Bruno Mts., San Mateo Co., 10♂♂, 1♀ V-3-63 (J. Powell).

The series was taken by beating *Baccharis pilularis* on an extremely windy day. Previous collections from the area were comprised entirely of males and were not associated with any host. The locality is one of a rich, highly mixed, coastal chaparral flora, including *Lupinus, Rhamnus, Scrophularia* and other possible foodplants of *A. franciscana.*

3) Morro Rock, San Luis Obispo Co., 2♂♂, 1♀ V-4-62 (J. Powell). The three individuals show such remarkable differences that no conclusion is apparent regarding the population there. One male is large (forewing length 8.3 mm) with the forewing pattern similar to typical *franciscana.* However, the forewing shape is broad, intermediate between *A. citrana* and *franciscana* (base–tornus: base–apex ratio = 1: 1.30). The hindwing color is also intermediate, gray on the basal half, becoming white toward the apex. The female is similar in size, forewing shape and hindwing color, but has considerable orange scaling on the forewings (which are badly worn).

The second male is completely different and may be characterized as follows: Forewing length 6.1 mm; base–tornus : base–apex ratio = 1 : 1.39; forewing ground color dark brownish gray, irrorate with black scales; markings whitish, distinctly margined but sprinkled with dark scales, a median band from before mid-costa to dorsum well before tornus, a partial band from beyond mid-costa towards tornus, meeting pale subterminal area, the two surrounding and defining the rounded outer costal spot; hindwing dark gray, fringe pale; abdomen blackish. The individual resembles only San Nicolas Island specimens of *A. franciscana insulana* Powell in material I have examined. The latter differ by a more chocolate brown rather than gray brown ground color and by having the pale markings somewhat more infused by ground color.

Morro Rock is a large rounded formation some 580 feet high, located at the entrance to Morro Bay several hundred yards from permanent ground of the mainland. It is now connected to the harbor area of the bay by what appears to be a man-made or recent sand spit. The rock bears a mantle of low, dense, coastal chaparral vegetation and could conceivably support an isolated population of *A. franciscana* which has been little or only very recently affected by *A. citrana* invading along an avenue of urbanization. Other records of the complex for the region (San Luis Obispo; Pismo Beach) are for *A. citrana* which is fairly typical of cismontane southern California (Powell, 1964).

4) Oso Flaco Lake, 5 mi. S Oceano, San Luis Obispo Co., 1♂ VIII-26-63 (J. Powell). The single specimen taken on a foggy day at this beach dune site somewhat resembles the *insulana*-like individual from Morro Rock. The Oso Flaco moth is smaller (forewing length 5.3 mm) with slightly paler ground color of both fore- and hindwings and with the markings distinct and somewhat more clearly whitish than on the Morro Rock example. The latter locality is about 30 miles north of Oso Flaco Lake. It will be interesting to see material in series from any spots in the area between Morro Bay and Point Concepción.

Argyrotaenia citrana (Fernald)

Tortrix citrana Fernald, 1889, Ent. Amer., 5:18.

Argyrotaenia citrana, Powell, 1964, U. California Publ. Ent., 32:203, Figs. (taxon., synon., biol.)

In my discussion of the geographical distribution of *citrana,* doubt was expressed that the species occupied as broad a range in California before the advent of civilization. It was pointed out that *citrana* is not known to have been native in northern California. There are no records for the northern half of the state prior to 1911, and the species has rarely been taken in natural habitats in the comparatively well collected central coast counties.

Several recent collections, however, tend to lessen, rather than confirm my doubts concerning the species' native occurrence at inland localities in this area. Although these for the most part do not represent natural sites or hosts, the populations exhibit phenotypes which are quite similar to that in cismontane southern California. The forewings are more or less uniform orange or orange-brown and the hindwings white, and the remarkable color and pattern variation exhibited by central coastal transition zone populations believed to represent areas affected by replacement of *A. franciscana* is not shown.

At Walnut Creek, Contra Costa County, only ten miles east of the coastal Berkeley Hills, moths taken April to October are of the typical *citrana* phenotype; those taken at lights in February usually have dark brownish forewings, a characteristic previously mentioned for the San Francisco Bay area populations. However, this may be a phenotypic response to winter conditions prevalent in the northern part of the state. Larvae collected at Walnut Creek in November and reared indoors produced adults of the bright orange early summer form.

Recent material from inland areas of the northern half of California which expresses typical *citrana* phenotype is as follows. Humboldt Co.: Miranda, 1♀ VIII-15-63, at light (J. Powell). Mendocino Co.: Ten Mile River, 3♂♂, 2♀♀ IX-5-62, r.f. *Eriophyllum staechadifolium*, emgd. X-(1-11)-62 (K. E. Frick). Contra Costa Co.: Walnut Creek (foot of Shell Ridge), 1♂ III-24-62, 1♂ IV-26-63, 1♀ V-25-61, 1♀ VI-18-62, 5♂♂, 3♀♀ VII-10 to VIII-20, '61–'62, 5♂♂ IX-18 to X-14, '61–'63, 1♂, 2♀♀ XI-24-63, r.f. *Pyracantha* berries, emgd. XII-14, 31-63, I-2-64 (JAP-63L3) (J. Powell). Alameda Co.: Oakland (back of Piedmont hills), 9♂♂, 6♀♀ V-14-62, r.f. *Cytisus scoparius*, emgd. VI-18 to VII-30-62 (K. E. Frick). Santa Cruz Co.: Lockhart Gulch, 4 mi. E Mt. Hermon, 1♂, 2♀♀ VII-11-61 (D. J. Burdick).

One additional native host plant can be added to the list of those utilized by *A. citrana*. Larvae were collected on *Photinia* (=*Heteromeles*) *arbutifolia* at Pt. Molate, Contra Costa Co., 27 December 1964. One female was reared, emerging January 27, and several adults of *A. citrana* were taken on the bushes 27 March 1964.

Argyrotaenia cupressae beyeria Powell, new status

Argyrotaenia beyeria Powell, 1960, Pan-Pac. Ent., 36: 85, Figs.; 1964, U. California Publ. Ent., 32:216, Figs. (taxon., biol.).

Study of additional material lends further evidence to my supposition (1964) that *beyeria* and *cupressae* should be considered as subspecies. Another collection was made from *Cupressus goveniana* near Cuesta Pass, San Luis Obispo County (3 ♂ ♂, 1 ♀ IV-4-63, emgd. IV-25 to V-2-63, JAP 63D3). This population appears to be intermediate between the two named entities in forewing phenotype. As mentioned previously, the scattered occurrence of cypress in southern California probably resulted in considerable interpopulational diversity in *cupressae* and *beyeria* in the southern half of California.

A collection from Miranda, Humboldt Co. (3 ♂ ♂, 1 ♀ VIII-15-63, J. Powell) extends the known range of *cupressae* (sens. lat.) about 100 miles northward. The specimens are uniform in appearance and evidently represent a population which is nearly as distinct from *beyeria* as the latter appeared to be from *cupressae* when the two were originally described. The Miranda individuals are small (forewing length 7.8 to 8.5 mm) and have pale, indistinctly marked forewings, most closely resembling those from the Petaluma–Napa area in material previously examined. The hindwings are distinctly mottled with pale grayish on both upper and lower surfaces, whereas in other *beyeria* specimens the hindwings exhibit only a trace of grayish mottling or are completely white. The Humboldt Co. moths were taken at light in a redwood grove (the second such collection for the race) with no other conifers seen nearby. It now seems certain that *Sequoia* is utilized as a host in addition to *Cupressus*; and Taxodiaceae and Cupressaceae in general may be.

Argyrotaenia dorsalana dorsalana (Dyar), new status

Tortrix dorsalana Dyar, 1903, Proc. Ent. Soc. Washington, 5: 231.
Argyrotaenia dorsalana, Powell, 1964, U. California Publ. Ent., 32: 220, Figs. (taxon., synon.).

Specimens from Utah Co., Utah (Timpanogos Cave Nat. Mon., 4 ♂ VI-22-63, C. A. Toschi) have been examined. These are fairly typical for the species, resembling British Columbia and northern California material I have seen, with straw yellow forewings and moderately well-developed costal and dorsal markings (which are rust brown rather than dark). Utah Co. is located between Colorado and Utah areas previously cited for the rust orange forewing phenotype suggested as a Great Basin race (Powell, 1964). This may not be unreasonable, however, as Timpanogos Cave is in the Wasatch Range and this mountain chain may harbor typical *dorsalana* as an interdigitation into Great Basin areas of rust-orange forewing phenotype.

Argyrotaenia dorsalana lautana Powell, new status

Argyrotaenia lautana Powell, 1960, Pan-Pac. Ent., 36: 90, Figs; 1964, U. California Publ. Ent., 32: 222, Figs. (taxon.).

During the past year I was able to collect a few additional individuals of this little known moth (Mt. Palomar, San Diego Co., 2♂♂, 1♀ VII-18-63). The present specimens are larger (forewing length: ♂ 10.7 mm, ♀ 13.1 mm) but otherwise do not differ appreciably from the type lot. The forewing ground color of the Mt. Palomar series is slightly paler than that of the types but not as pale as that shown by the Greenhorn Mountains specimens mentioned in the original description. The female in the present collection lacks all markings except traces of the costal ones, and one male has somewhat more extensive markings than the holotype, and approaches the Greenhorn Mountains phenotype.

Study of recent material indicates that the parallel sided uncus cited for *lautana* in the original description is not a consistent character. In view of this and the forewing pattern variation shown at Mt. Palomar which further illustrates the similarity of *lautana* and *dorsalana,* it seems best to consider the two as subspecific components of a single species which is widely distributed both ecologically and geographically in the western Nearctic region.

Argyrotaenia dorsalana subspecies

One additional male specimen of the complex which probably represents an undescribed race in Mexico has been examined. The individual may be characterized as follows, but nomenclatorial subspecific designation is not reasonable on the basis of a single specimen.

Male: Length of forewing 7.6 mm. *Head:* Labial palpus short, second segment about equal in length to vertical eye diameter, third segment about one-third the length of second; scaling not greatly spreading, pale ochreous orange, brownish at tips; head tufts concolorous. *Forewing:* length about 2.6 times width, costa broadly bowed to middle, distinctly concave beyond, termen not strongly angled back, nearly straight. Ground color pale ochreous orange (somewhat worn), markings pale brownish as follows: costal dot at basal one-fifth; median band from just before mid costa to dorsum before tornus, narrow and distinct at costa, becoming broad and indistinct below cell, produced outwardly in cell; outer transverse band from apical concavity of costa to termen above tornus indicated by broad costal spot and a thin line from latter to termen. Some reddish orange scales along margin around apex to mid termen. Fringe with a distinct, dark basal band. *Hindwing*: white. *Genitalia:* similar to *A. dorsalana* (Powell, 1964: Fig. 46); uncus more elongate, about equal to length of tegumen; valva a little more pointed; caudal flap of sacculus slightly more produced, blunt-pointed sacculus tip spine more elongate; cornuti of vesica lacking from this individual.

Material examined: MEXICO: 60 mi. E Zamora, Michoacan, 1♂ VI-24-57 (J. A. Chemsak and B. J. Rannals).

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